

USAWC STRATEGY RESEARCH PROJECT

**TACTICAL AIRPOWER WITH STRATEGIC LEVERAGE:
AN ANALYSIS OF THE USE OF TACTICAL AIRPOWER
IN GROUND ATTACK TO SUPPORT THE COMBINED
BOMBER OFFENSIVE, 1943-1945**

by

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ABSTRACT

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Much historical analysis of the World War II Combined Bomber Offensive (CBO) has focused on the “heavy bomber” aspects of Combined Bomber Offensive strategy. However, one aspect of the offensive that has received little attention has been the use of tactical air assets, specifically, fighter-bombers, to support and augment heavy bomber operations. This has meant that a comprehensive analysis of the CBO has been unavailable, leaving a gap in the historical record, and in our understanding of the full use of air assets in wartime.

This research breaks new ground in World War II CBO analysis. By explaining tactical fighter aviation’s important contribution to this campaign, it expands airpower perspectives and validates key airpower theoretical and doctrinal tenets. It examines the offensive from an “airmindedness” perspective instead of stove piping strategically significant decisions and events into either tactical or strategic categories based on aircraft type or whether missions directly or indirectly supported land forces. This is critically important because its relevance to airpower employment has timeless applicability. Furthermore, this research explores “effects-based” logic and decision-making and shows that this mode of thinking is not necessarily new in today’s airpower lexicon.

Moreover, this research provides fresh insight into this complex and dynamic application of combat power in the skies over Europe. Without digressing into a combat chronology, it tells an important story of ingenuity, adaptability, and the evolutionary nature of CBO strategy driven in part by operational failure, in part by operational success, and immeasurably by strong and competitive airpower leadership. It highlights the complexities of inter and intra-service rivalry fueled by competition for finite airpower resources while simultaneously examining the intricate and often not so subtle demands created by the Anglo-American alliance.

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TACTICAL AIRPOWER WITH STRATEGIC LEVERAGE: AN ANALYSIS OF THE USE OF TACTICAL AIRPOWER IN GROUND ATTACK TO SUPPORT THE COMBINED BOMBER OFFENSIVE, 1943-1945

Strategy can only direct its efforts toward the highest goal which the means available make attainable.

—Helmuth Von Moltke

The richly detailed historical record of the World War II Combined Bomber Offensive (CBO) focuses on the “heavy bomber” aspects of strategic bombardment strategy in the European theater. However, in explaining this strategy, analysts and historians have inadequately considered another essential “means” that proved crucial in its execution: tactical fighter aviation in the ground attack role. Consequently, when the ends, ways, and means of CBO strategy are analyzed as a comprehensive air campaign, there is still much that is left unexplained, leaving significant historical gaps. Only by fully considering the employment of fighters and fighter-bombers can we understand the impact of the CBO, and its use of airpower assets to achieve allied strategic goals in the European theater.

This research breaks new ground in World War II CBO analysis. By explaining tactical fighter aviation’s important contribution to this campaign, it expands airpower perspectives and validates key airpower theoretical and doctrinal tenets. It examines the offensive from an “airmindedness” perspective instead of stove piping strategically significant decisions and events into either tactical or strategic categories based on aircraft type or whether missions directly or indirectly supported land forces.¹ This is critically important because its relevance to airpower employment has timeless applicability. Furthermore, this research explores “effects-based” logic and decision-making and shows that this mode of thinking is not necessarily new in today’s airpower lexicon.²

Moreover, this research provides fresh insight into this complex and dynamic application of combat power in the skies over Europe. Without digressing into a combat chronology, it tells an important story of ingenuity, adaptability, and the evolutionary nature of CBO strategy driven in part by operational failure, in part by operational success, and immeasurably by strong and competitive airpower leadership. It highlights the complexities of inter and intra-service rivalry fueled by competition for finite airpower resources while simultaneously examining the intricate and often not so subtle demands created by the Anglo-American alliance.

It begins by examining why key military strategists dismissed the fighter-bomber when formulating initial CBO strategy and then identifies the critical impasse that made the fighter-

bomber an essential variable for fulfilling the “means” portion of the CBO strategy equation. The paper then examines the employment of fighter-bombers working in concert with heavy bombers to determine what degree of “effects based” logic airpower leaders considered when assigning CBO missions. From this, it evaluates the level of “airmindedness” applied by senior leaders to create the synergistic relationships that matured through the evolution of CBO strategy, and seeks to identify and highlight the relevant lessons for modern airpower planners and strategists.

EVOLUTION OF COMBINED BOMBER OFFENSIVE STRATEGY

“Hitler built a fortress around Europe, but he forgot to put a roof on it.”

—Franklin D. Roosevelt

In March of 1941, a rudimentary Anglo-American bombing strategy emerged during the ABC-1 negotiations in Washington D.C. Leaders concluded that if America entered the war, a sustained air offensive against Germany and Axis-controlled areas would be essential to an overall strategy contributing to an eventual European land offensive.³ From this first step, the U.S. War Department produced a war plan summarizing the U.S. economic and military effort needed to fight both Germany and Japan. Attached to this plan was an air strategy annex, titled Air War Plans Division 1 (AWPD-1), hastily drawn up by the newly formed Air War Plans Division, but fundamentally based on airpower principles previously espoused at the Air Corps Tactical School (ACTS).⁴ AWPD-1 recommended that the first task was “to conduct a sustained air offensive against Germany and Italy to destroy their *will* and *capability* to continue the war”.⁵ Additionally, it directed air forces to prepare to support an invasion of Europe and subsequent land operations on the continent as needed.⁶ Virtually every aspect of AWPD-1 and its subsequent revision, AWPD-42, would find its way into CBO strategy.⁷ Airpower’s significance in the looming war was destined, but what would that airpower look like and why?

In these early stages, air leaders never intended for tactical fighter ground attack operations to either support or augment what they considered the key axiom upon which the true value of airpower rested: strategic bombardment by heavy bombers. CBO strategy, authored by strategic bombing proponents, enthusiastic about airpower’s most advanced technology—the high altitude, self-defending heavy bomber—would prove airpower’s decisiveness and national utility.⁸ Besides, technological deficiencies in fighter-bomber design prevented serious considerations for using this asset in any sort of strategic role.⁹ On the political front, strategic bombing captivated both Prime Minister Winston Churchill and U.S. President Franklin Roosevelt and infused them with a strong sense of hope.¹⁰ As the CBO progressed, however,

failure to meet key operational ends became the expedient that forced ingenuity to overcome deficiencies and forced sound military strategy to replace hope. Ingenious response to failure became the catalyst that eventually enabled fighter-bombers to effect strategic leverage by supporting and augmenting heavy bombers in ground attack.

Initial CBO strategy emphasized the heavy bomber and ignored the fighter for two key reasons, technology and airpower doctrine. In the early 1930s, industry delivered high performance bombers configured with retractable landing gear that were nearly as fast as the best fighters.¹¹ By the mid-1930s, exuberant Army Air Force (AAF) Airmen became so convinced of the technological superiority of bombers such as the B-17, equipped with the Norden bombsight, and the promise of the B-29 and B-36, they believed they could fly daylight, high altitude, unescorted missions into enemy territory and drop with the accuracy to hit a "pickle barrel".¹² Thus, in what Airmen considered a technological breakthrough, the bomber surpassed the fighter, giving the former a supposed survivability and capability that would insure its primacy as a tool of air warfare.¹³

This ignited serious debate and rivalry at the Army Air Corps Tactical School. Surprisingly though, the debate centered less on fighter-bomber development than it centered on utilizing fighters in strictly pursuit roles. In fact, Major Claire Chennault, ACTS Chief of Pursuit and the school's leading champion of fighter aviation, was mostly concerned with making pursuit the offensive branch of aviation, contending that pursuit should be the air arm's basic purpose. Others such as Lieutenant Colonel Harold George, ACTS Director of Air Tactics and Strategy, and Lieutenant Colonel Kenneth Walker, ACTS Bombardment Section Instructor, argued that bombardment was the real offensive element and should be the basic air arm of the AAF.¹⁴ Eventually, both George and Walker would contribute significantly to the writing of AWPD-1. In retrospect, these early arguments categorically stove piped airpower resources in a manner that directly influenced CBO strategy formulation in the near term, and, in the long term, created serious deficiencies in the "means" variable of that strategy equation. Airpower visionaries, by categorizing fighters as tactical (defensive) and bombers as strategic (offensive), unwittingly blinded themselves to the benefits of integrating fighters and bombers into a synergistic air campaign that would net operational and strategic gains.

Codifying this artificial distinction into AAF doctrine further limited considerations for employing fighter-bomber assets to achieve anything more than tactical ends. As doctrine evolved in the 1930s, it became apparent that Air Force leaders were fixated on strategic bombardment.¹⁵ Air leaders sought individual action that would prove airpower's decisiveness;

fighters, neatly stove piped into tactical ground support of land forces or into defensive aerial combat, were not going to provide that individual action.

Influential airpower leaders who eventually organized, commanded, and employed key CBO units, stressed and magnified this view. General Henry “Hap” Arnold, the leader of the AAF on the eve of war, possessed an unbounded faith in the heavy bomber and independent air action or strategic bombardment.¹⁶ In early 1941, Lieutenant General Ira Eaker, a prominent airpower leader who would become the first commander of Eighth Air Force, the key American unit for executing CBO strategy, wrote in *Winged Warfare*, a book he co-authored with General Arnold: “...it is nonetheless a fact that the bomber is the essential nucleus of an air force. The fighter is a defensive type of aircraft strategically, but the bomber is distinctly offensive in character. Battles are won by vigorous offensive and seldom, if ever, by the defensive.”¹⁷ Prior to this in 1934, Harold George, testifying before Congress, had set the mark for airpower's supreme purpose by stating: “...the object of war is now and always has been, the overcoming of the hostile will to resist. Before the advent of airpower there was no means whereby pressure could be applied directly to break down the hostile will...”¹⁸

The heavy-bomber was the weapon system of choice and the air strategy par excellence was independent air action against an enemy's will to resist. To those responsible for crafting CBO strategy between 1941 and 1943, fighter-bomber technology simply did not provide the “means” to facilitate the “way” the ends would or could be achieved.¹⁹ Notwithstanding technological issues and doctrinal bias, another reason for this can be partially explained by the cold reality that Europe's urgent situation and the tenuous balance that sustained Great Britain demanded an immediate strategy that employed decisive kinetic punch—strategic bombing by heavy bombers.²⁰ And as historian Dr. Tami Biddle writes in *Rhetoric and Reality in Air Warfare*, Anglo-American Airmen saw what they expected to see and saw what was in their interests to see as probable air strategy solutions.²¹

Such was the situation when America entered the war. Airmen put their trust in the heavy bomber because they believed the heavy bomber was the technological answer to delivering decisive action directly against an enemy's will to resist. From this, a fundamental assertion that became central to British and American thinking about long-range bombing was that modern, urban-based societies were fragile, interdependent, and therefore peculiarly vulnerable to disruption through aerial bombing.²² Thus, Airmen from both nations believed that disrupting enemy “will to resist” was intricately linked to bombing an enemy's industrial capacity, which included resources, factories, and workers.²³ In this heavily offensive use of airpower was a willingness to make war against civilians, but its appeal lay in the notion that by elevating war to

twenty-five to thirty thousand feet it might avoid the deadlock and fruitless bloodletting of World War I trench warfare.²⁴ What was now needed was a combined Anglo-American effort to buildup bomber forces and strike Germany with the power necessary to destroy the Nazi will to resist.

At the January 1943 Casablanca Conference, Churchill and Roosevelt issued the Casablanca Directive. It specified vigorous prosecution by Anglo-American air forces toward a common grand strategic objective, optimizing the special strength and capabilities of each air force toward that common goal. The 'special strength and capabilities' clause pacified arguments over day versus night bombing and permitted the AAF to pursue unescorted daylight precision bombing of industrial targets while the Royal Air Force (RAF) continued nighttime area attacks against population centers.²⁵ As described in the directive, the ultimate objective of British and American strategic air forces was: "The progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened." Targets were taken directly out of AWPD-42 and then subsequently altered in June 1943 to include the German ball-bearing industry.²⁶

Unbeknownst to American Airmen, the stage was now set for near disaster that would temporarily de-fang the CBO and force a rapid evolution in CBO strategy. Main assumptions about high altitude precision bombing by self-defensive bombers had proved problematical at best—plain wrong at worst.²⁷ In the summer of 1943, Eighth Air Force set its sights on the ball-bearing factories at Schweinfurt and the Me-109 assembly plant at Regensburg. CBO planners deemed these factories so vital to Germany's war prosecution and so concentrated a target that leadership resolved to attack them as early as possible without long-range fighter escort.²⁸

Until Schweinfurt, AAF leadership had hoped and expected that unescorted bombers, heavily gunned, and flying in well-designed formations, could penetrate deeply into the Reich with acceptable loss ratios. They were wrong. In two raids, staged in August and October, the results were horrendous with German fighters taking an unmerciful toll. Of the 1st Bombardment Wing's 230 bombers destined for Schweinfurt, 34 did not return—a 15 percent loss rate. The 3rd Wing, suffered even more; of the 146 bombers that had launched for Regensburg, only 122 reached planned landing bases in North Africa, a loss rate of 16.5 percent. Bombing was considered 'accurate' but the Schweinfurt bombs had not been heavy enough. Buildings were destroyed but the heavy machinery survived.²⁹ Consequently, 291 B-17s repeated the Schweinfurt attack on October 14. The losses were worse; 60 did not return, a loss rate of 20.5 percent. While the bombing was again deemed 'accurate' and the destruction extensive, no air force could continue attacks with such loss ratios.³⁰

After the second Schweinfurt mission, daylight penetrations beyond fighter escort were sharply curtailed. Additionally, the heavy losses vaporized any hope that a CBO bombing strategy would alleviate the requirement for a land invasion. Now, the requirement to invade along with requirements for long-range fighters fostered innovative uses of tactical aviation to support the heavy bomber effort; CBO strategy was about to evolve dramatically.³¹

TACTICAL REVISION, OPERATIONAL REFOCUS, STRATEGIC REBIRTH

Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.

—Douhet

Schweinfurt put the American component of the Combined Bomber Offensive at a critical impasse. The heavy losses and the need to defeat the Luftwaffe prior to attempting any cross-channel land invasion convinced allied leaders that destroying the Luftwaffe had to shift from being an intermediate CBO objective to becoming the primary objective. This required an immediate solution to the long-range fighter escort problem—a solution that once implemented, would markedly impact utilizing the fighter as a fighter-bomber to achieve CBO objectives. The solution came with the introduction of not only a better fighter, the P-51, but also with the introduction of expendable, range-extending, external fuel tanks.³² Simultaneously, substantial increases in heavy bomber strength boosted the Eighth Air Force's power. With long-range fighter escort and more bombers, the CBO daylight component was resumed, but resumed with a different focus, under a different organizational structure, and commanded by a new leader.

In December 1943, General Arnold reorganized European and Mediterranean AAF under a new command, the United States Strategic Air Forces in Europe (USSTAF), commanded by Lieutenant General Carl Spaatz. This new headquarters had operational control of two U.S. strategic air forces, the Eighth in Britain and the Fifteenth in Italy. Under the direction of the Chief of the Air Staff, RAF, who acted as an agent for the Anglo-American Combined Chiefs of Staff, Spaatz assumed responsibility for directing the U.S. portion of the CBO. It was further agreed that prior to OVERLORD, Spaatz would come under the command of General Dwight Eisenhower, the Supreme Allied Commander of the invasion force.³³

Immediately, Spaatz wanted to exploit his POINTBLANK directives and vigorously attack the Luftwaffe.³⁴ It is important to note that Spaatz's approach differed significantly from that of his predecessor, Lieutenant General Ira Eaker. Because Eaker had lacked sufficient numbers of escort fighters, he felt he had little choice but to rely on a bomber-based strategy.³⁵ Essentially, the Eighth under Eaker had attempted to ruin the German fighter force by bombing

its air industry, hoping that attrition inflicted on all battlefronts would destroy the damaged German air industry's ability to replace losses. To accomplish this, Eaker focused heavily on his bombers and their tasks, while at the same time, he firmly believed in espoused doctrine that strictly wedded fighters to bomber formations. This forced the few fighters he did have to concentrate on escort duties to the detriment of possible counter-air and ground sweep employment. In 1943, the prevailing sentiment characterizing Eaker's philosophy was "fighters must escort the bombers whether they bring down any German fighters or not".³⁶ With this, he failed to grasp that the critical objective of employing fighter escorts was to engage and destroy the Luftwaffe while simultaneously protecting the bombers. The old stove pipes of tactical and strategic, of offensive and defensive were shaping operational decision making to the detriment of the overall CBO campaign. If the allies were going to destroy the Luftwaffe, fighters would have to exit their defensive stovepipe and take the offensive. AAF leaders were learning what is held today as a fundamental airpower truth that airpower is primarily an offensive weapon and that there are rewards to be reaped by assuming the offensive.³⁷

General Arnold, eager to change Eaker's philosophy, empowered Spaatz to rethink bomber escort and fighter employment. Arnold recommended in a memo that the allied air forces "seek out and destroy the Luftwaffe in the air and on the ground without delay. The defensive concept of our fighter commands must change to the offensive." He called for more imaginative use of fighters as ground strafers, as fighter-bombers, and as air-to-ground rocket launchers.³⁸ In a December 1943 CBO progress report, General Arnold wrote, "to hasten the end of the war we must achieve maximum flexibility with our bombing, by altering our techniques, employing new gadgets, and by any other means found practicable...to secure an uninterrupted bombing offensive of the greatest possible effectiveness."³⁹ General Arnold became pointedly directive when he issued this order to Eighth and Fifteenth AAF commanders on 27 December 1943: "...my personal message to you—this is a MUST—is to, 'Destroy the enemy air force wherever you find them, in the air, on the ground, and in the factories'".⁴⁰

Spaatz, fully resourced at a level Eaker could only wish for and assured of Arnold's support for more offensive fighter tactics, told Colonel Richard D'O. Hughes, Assistant Chief of Intelligence, that he planned to accomplish precisely what Arnold had directed. However, he went on to state: "It is my belief that we do not get sufficient attrition by hitting fighter factories, therefore we must emphasize airdromes and knocking fighters down in the air. Although our mission is destroying the Luftwaffe, we will hit *primary* objectives when the weather permits, but at other times will target airdromes, which will bring the Luftwaffe into the air."⁴¹

Spaatz's referral to primary objectives in such a way as to not delineate air action as bomber focused or fighter focused had implications of three-fold importance. First, Spaatz seemed to recognize the need to intricately link all resources into the CBO strategy. Second, Spaatz seemed committed to shaping air action with asymmetrical applications of resources that go outside the traditional, early World War II mindset that bombers are offensive and fighters are defensive. Aggressively attacking airdromes with fighters is hardly *defensive*. One could argue that this was the beginning of a truly 'airmindedness' construct in the AAF and in the CBO planning apparatus and process. Third, Spaatz's broad vision for fighter employment would eventually create overlap between CBO and OVERLORD operational objectives. This directly affected the strategic ends of CBO strategy--specifically, the transportation and oil plans, discussed later in this text, which sought to isolate and dislocate the German economy and the German war machine. These three shifts in airpower reasoning reoriented operational thought as to how to achieve CBO strategic ends. Specifically, they called into question how finite airpower resources should be allocated to create the synergy required to not only defeat the Luftwaffe but also meet other CBO objectives. Fundamentally, this reorientation ensured fighters and fighter-bombers would play a major role but not without some controversy.

OVERLORD preparations created several confusing and controversial command relationships. One of the most controversial that affected fighter-bomber participation in CBO strategy and heavy bomber participation in OVERLORD strategy was the parallel command relationship that had strategic bombers under Spaatz's USSTAF and tactical fighters under the Allied Expeditionary Air Force (AEAF) commanded by Air Chief Marshal Trafford Leigh-Mallory. In reality, USSTAF had both bombers and fighters, but not enough fighters; AEAF had both fighters and medium bombers, but not enough bombers. The American Ninth Air Force, comprised of both fighters and medium bombers, was Leigh-Mallory's principal unit.⁴²

Leigh-Mallory disagreed with Spaatz and proved less than amenable in matters involving Ninth Air Force participation in strategic bombing missions. Spaatz argued that *strategic* missions consisted of much more than simply flying the heavy bombers and escorts to their objectives and returning them. Punishing the Luftwaffe and destroying targets *required* large-scale assistance from Ninth. For example, USSTAF needed the Ninth's fighter-bombers and medium bombers to fly diversionary raids or to strike enemy airfields in missions timed to coincide with the takeoff, assembly, and landing of Luftwaffe defensive fighters. In addition, the Ninth's formations were needed to help confuse German fighter controllers by cluttering up their early warning system with hundreds of additional planes.⁴³ Spaatz called these coordinated strikes "absolutely essential" to the maximum protection of heavy-bomber formations and the

destruction of the Luftwaffe. Leigh-Mallory, on the other hand, was most concerned with protecting and nesting his force for OVERLORD.

Spaatz prevailed when the arguments were elevated to senior leadership. He then turned his attention to the Ninth Air Force commander, Major General Lewis Brereton. Brereton saw Spaatz as a “noncooperator” with pre-invasion tactical air plans. Both he and Leigh-Mallory were directed to field air forces highly trained in close air support; they could not do so as long as Spaatz insisted they devote maximum support to CBO objectives. As usual, when training demands and operational necessity clashed, the immediate needs of the active forces at the front took precedence. Spaatz was destroying airplanes, killing German pilots, and bombing factories while the tactical airmen wanted to conduct training exercises.⁴⁴ Fighters would support the strategic mission as would bombers eventually support what was considered the tactical mission.⁴⁵

Consequently, by the end of January 1944, the Eighth introduced the doctrine of “ultimate pursuit”, allowing fighters to follow the enemy, wherever he might be, until they destroyed him in the air or on the ground. If enemy aircraft refused to attack the bombers, two-thirds of the fighters searched both flanks and above and below the bombers for the enemy. As a result, combat took place at all altitudes, and small formations of U.S. fighters egressed low level to attack targets of opportunity.⁴⁶ Luftwaffe Maj. Gen. Adolph Galland, commander of the German day-fighter force, recorded the effect of the new U.S. tactics:

American fighters were no longer glued to the slow-moving bomber formation, but took action into their own hands. Wherever our fighters appeared, the Americans hurled themselves at them. They went over to low-level attacks on our airfields. Nowhere were we safe from them. During take-off, assembly, climb and approach to the bombers, when we were in contact with them, on our way back, during landing, and even after that the American fighters attacked with overwhelming superiority.⁴⁷

In February 1944, fighters, fighter-bombers, and heavy-bombers cooperated fully in an operation code named ARGUMENT, or Big Week. Here, allied fighter-bombers made their debut in ground attack operations directed toward achieving the CBO operational end of defeating the Luftwaffe. From the 19th to the 24th of February, the AAF and RAF fought their way to and from targets deep inside the Nazi homeland. The Luftwaffe reacted savagely, provoking heavy and prolonged combat with great attrition on both sides. The Eighth lost one-fifth of its force, whereas the Luftwaffe lost more than 33 percent of its single-engine fighters and almost 18 percent of its fighter pilots.⁴⁸

Although postwar research has shown that the missions accomplished less than originally estimated, what made Big Week “Big” was not the physical damage inflicted on the German

fighter industry and front-line fighter strength, but rather the psychological effect it had on the AAF. Spaatz and other high-ranking American air officers had validated their belief in their chosen mode of combat.⁴⁹ This belief transcended prewar emphasis on strategic bombardment and possibly laid the foundation for what today would be called “effects-based” logic in airpower application. It was no longer a matter of encapsulating all airpower issues within a bomber strategy; instead it was a matter of matching the right resources to the right targets at the right time to achieve specific effects. Tactical and strategic stovepipes were being chipped away and a more operationally oriented perspective was emerging. For example, by April 1944, instead of just launching bombers to drop blindly through cloud cover, the Eighth was launching fighter sweeps in weather unsuitable for bombers to keep up the pressure over western and central Germany. In addition to ground attack sweeps, Americans flew “free sweeps” toward German fighters in suspected concentration areas to disperse them before they could mount attacks on the bombers.⁵⁰ Air leaders were truly learning and adapting in real time while becoming interested most in achieving the desired “effect” of keeping the Luftwaffe cornered using any and all air assets available.

In seeking “effects-based” results, Spaatz integrated fighters, fighter-bombers, medium bombers, and heavy bombers into a synergistic air campaign that sharply reduced Luftwaffe capability. For the first time in CBO strategy, an Airman, Lieutenant General Spaatz, had worked through organizational complexities, command idiosyncrasies, complexities of resource distribution, and parochial mindsets to orchestrate an effective operation to meet CBO operational ends. Meeting this requirement paved the way for achieving strategic ends in bolder missions that showcased fighter-bomber participation and, unfortunately, demonstrated that opportunities could still be missed.

BEYOND AIR SUPERIORITY

Airpower can conduct parallel operations at all levels of war simultaneously.

—Col Phillip Meilinger, 10 Propositions

The synergy of fighters, fighter-bombers, and heavy bombers fighting to defeat the Luftwaffe opened new vistas about fighter and fighter-bomber employment. A superb example was Spaatz’s desire to attack V-1 and V-2 rocket sites with fighter-bombers to free up heavy bombers for attacking industrial targets. The buzz bomb menace resurfaced in June 1944 when V-1 flying bombs rained down on London; the raids only increased in numbers and severity over the months ahead. Eisenhower, urged by Churchill, ordered CBO heavy bombers, under the code name CROSSBOW, to prioritize V-weapon sites over everything but the urgent

requirements of battle.⁵¹ Revised target priorities placed Eighth Air Force into a resource allocation dilemma that divided heavy bomber requirements between industrial targets, OVERLORD direct support targets, and now the V-1.⁵² Arnold and Spaatz were convinced there was a better way to execute CROSSBOW and free up heavy bombers for industrialized targets.

Months prior, in January 1944, General George C. Marshall approved a War Department committee suggestion that the AAF be given as a high priority project, “the technical and tactical inquiry into the means, methods, and effectiveness of air attacks against CROSSBOW targets”. With this mandate, the AAF conducted extensive testing at Eglin Field, Florida.⁵³ This rigorous testing verified beyond question the opinion of the War Department’s CROSSBOW committee, of General Arnold, and of American air commanders in Britain: properly executed minimum-altitude attacks by fighters were the most economically effective aerial countermeasure against V-1 launch sites; medium and high-altitude bombing attacks were the least effective and most wasteful bombing countermeasures.⁵⁴ In May 1944, four P-47s carrying two 1000-pound delayed-fuse bombs attacked four V-1 sites. Despite enemy heavy machine-gun fire, three of the four attacking P-47s damaged the site sufficiently to neutralize it for several months, with no loss of aircraft. What made this even more encouraging was the Eglin Field report had established the P-38 as twice as effective as the P-47 in low-altitude V-1 attacks and had recommended, for maximum damage, the use of 2,000-pound bombs. But the first fighter pilots to employ the technique in the theater had, with a less effective aircraft for this purpose, inflicted significant damage at an expenditure of one ton of explosive per site. This was in contrast to the expenditure of 1,947 tons per site by heavy bombers for similar damage in the last two weeks of April.⁵⁵ Furthermore, Lieutenant General James Doolittle, Eighth Air Force commander, in reviewing CROSSBOW missions, wrote to General Arnold: “British Mosquitoes are the most effective type of aircraft, achieving the highest degree of damage with less tonnage, fewer sorties, and fewer losses than any other type of aircraft.” Both Generals Arnold and Doolittle were beginning to see that precision, as best precision could be defined during World War II, had a quality of “mass” all its own. Despite these positive developments that would have matched appropriate resources against targets to achieve desired effects, medium and heavy bombers still shouldered the weight of CROSSBOW targeting. It is apparent the beginnings of “effects-based” logic had to survive complex command relationships and Anglo-American political acrimony between air leaders.⁵⁶

Arnold, Spaatz, and Brereton strongly supported employing the minimum-altitude, fighter-bomber technique into wide-scale CROSSBOW operations. The British, however, favored heavy bomber employment, principally on the grounds that fighter attacks had, in some

instances, been costly and ineffective in the early months of CROSSBOW operations. Leigh-Mallory, the principal British air commander concerned with CROSSBOW, was inflexibly opposed to reducing bomber operations in favor of fighter attacks. His preference for heavy bombers was ostensibly based upon his belief that fighters were too vulnerable to German defenses.⁵⁷ Given his earlier reluctance about providing fighter support for ARGUMENT, it is clear he was concerned about high fighter attrition, which could subsequently impact his ability to provide close support for OVERLORD and beyond.⁵⁸

This disagreement highlights the absolute necessity for one Airman to *centrally* control airpower, especially when engaged in coalition warfare. Airpower's inherent flexibility and versatility can be fully exploited only through what is today called a Combined Forces Air Component Commander (CFACC).⁵⁹ The CFACC concept enables airpower leaders to view the war as a battlespace that competes for finite resources, which, in turn, requires interdependence among joint and combined forces. Furthermore, effects-based applications of combat power in a resource-constrained battlespace require centralized control to ensure such principles as unity of effort and economy of force are met.⁶⁰ Air Marshal Arthur Tedder, General Eisenhower's deputy commander for air stated clearly: "Air warfare cannot be separated into little packets; it knows no boundaries on land and sea other than those imposed by the radius of action of the aircraft; it is a unity and demands unity of command."⁶¹

By late February 1944, AAF leaders recognized that the CBO had progressed to a point where they could think again beyond the overarching need to defeat the Luftwaffe. They could concentrate more broadly on German military and industrial resources. Two plans, dubbed the "transportation plan" and the "oil plan", were tabled. The "transportation plan" focused on destroying German railways, rolling stock, and military re-supply and troop movements. The "oil plan" assumed that the destruction of only fourteen synthetic oil plants and thirteen refineries would reduce more than 80 percent of production and 60 percent of readily usable refining capacity.⁶² Eisenhower favored the transportation plan but gave Spaatz leeway to carry out both simultaneously. Eighth Air Force fighter-bombers could bomb both French railway targets and synthetic fuel plants in the Ruhr. RAF Bomber Command could make daylight attacks against French rail targets or bomb synthetic fuel plants in Stettin or, if they wished, the Ruhr at night. In Romania, the Fifteenth Air force might bomb transportation targets, and the Russians might advance far enough to send their limited-range planes against Ploesti.⁶³

Executing both plans demonstrated superb cooperation between fighter-bombers and heavy bombers in ground attack.⁶⁴ Since rail centers were large targets, often as large as several hundred acres, the transportation plan required fighters and the heavy bombers.⁶⁵

Hitting the railroad system at its fattest, strongest points, the marshalling yards, required the mass generated by heavy bombers. However, to gain maximum effects, fighter-bombers were needed to cut railroads at various points between marshalling yards. When marshalling yards became jammed with backed up throughput because the railroads were cut (normally at bridges), bombing them with heavy bombers produced greater effects.⁶⁶ The complementary nature of both target systems enabled AAF fighter-bombers and bombers to effectively inhibit German maneuver warfare.

In April of 1944, Ninth Air Force pilots flew the first major rail interdiction strikes. Over a hundred P-47s attacked railroad repair shops in Belgium, with a follow-up mission by fifty-six P-51s two days later. Later, a P-47 group stopped troop and freight train movements in Northern France and inflicted damage on several rail junctions. In May, pilots employed new procedures to attack and destroy thirteen moving locomotives, thus significantly depleting the least replaceable cog in Western Europe's transportation system.⁶⁷

Fighters also became instrumental in destroying bridges, a key target in the transportation network.⁶⁸ Although heavy bomber advocates disbelieved the fighter-bomber's ability to destroy bridges, fighter-bomber pilots became skilled at this mission and proved by far the most efficacious in knocking out these difficult and well-defended targets. Spaatz stated that these attacks "opened the door for the OVERLORD invasion."⁶⁹

The cooperation between heavy bombers and fighter-bombers in executing CBO strategy is a case study for ingenuity and superb leadership. Although the processes for enabling this cooperation were based more on leadership personality and persistence vice formal organizational architecture, Airmen demonstrated great character in turning operational failure into strategic success. It has taken years to codify that success into any sort of doctrinal or organizational construct primarily because stove piping operations along tactical or strategic lines, until recently, have been utilized all too often to classify operations. Fortunately, today's Air Force has adjusted and moved toward "effects based" logic, while recognizing the timeless lessons derived from her proud heritage. However, there still remains room for thoughtful reflection.

CONCLUSIONS

It is the effect, rather than forces applied, that is the defining factor.

—Air Force Doctrine Document 1 (AFDD-1)

Since Operation DESERT STORM, the Air Force has long recognized the danger of stove piping resources into either tactical or strategic categories and recognized the oft-overlooked

paradox that tactical events can very well generate strategic consequences. In fact, the early 1990s saw a complete Air Force major command reorganization to confront these issues. When the stalwart Strategic Air Command and venerable Tactical Air Command merged to become Air Combat Command, Air Force leaders committed themselves on a road of “effects-based” strategies that had little tolerance for strict categorization of resources. Airmen now declare, *tell me ‘what’ you want instead of ‘who’ you want*, referencing a crux of effects-based rationale.

This principle became crystal clear during Operation ENDURING FREEDOM when B-52s delivered precise close air support to forces in Afghanistan. Did this mean the close air support workhorse, the A-10, had been supplanted by the “heavy bomber”? No, no more so than the fighter-bomber supplanted the heavy bomber during CBO operations. In 1943, World War II airpower leaders started to recognize what modern-day airpower leaders fully recognize--airpower employment can be applied as a parallel art. This means that airpower can be employed to gain, simultaneously, tactical, operational, or strategic effects anywhere in the battlespace provided the proper ‘force mix’ is achieved. Professional Airmen, educated with “airmindedness” perspectives, see the intricate relationships between airpower assets, highly-trained personnel, and results-oriented organizations that enable Airmen to leverage the ‘force mix’ for effects-based operations outside the confines of tactical, operational, or strategic stovepipes.

But the argument is hardly settled. World War II ghosts echo loudly and tempt Airmen to over embrace new technologies and disregard synergies gained by non-traditional associations of assets. For example, the emergence of space power and full spectrum dominance will challenge doctrinal constructs just as doctrinal constructs were challenged during the Combined Bomber Offensive. Consequently, it would be naïve to consider the lessons learned from the fighter-bomber’s contribution to the CBO as simplistic and time specific. The issues remain but they are cloaked in different guises whose solutions require the ingenuity, persistence, and commitment exhibited by early airpower leaders like Arnold, Spaatz, Tedder, Eaker, and Chennault. It seems clear that tactical fighters produced more than strategic leverage during the Combined Bomber Offensive; they produced timeless lessons learned that will shape perceptions about how airpower can and should be employed to achieve war winning effects for years to come.

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ENDNOTES

¹ College of Aerospace Doctrine, Research, and Education, *Essays on Air and Space Power, Vol 1* (Maxwell AFB, AL: U.S. Air Force Air University, 1997), 67-79, 97-106. General Henry H. "Hap" Arnold coined the term airmindedness to explain the Airman's distinctive point of view. This viewpoint reflects the range, speed, and capabilities of air and space forces, as well as threats and survival imperatives unique to Airmen. Consequently, it shapes the Airman's unique understanding of the Principles of War as they are shaped by the key airpower tenets of centralized control/decentralized execution, flexibility, versatility, priority, synergy, balance, concentration, and persistence. Applying an airmindedness perspective, albeit a more advanced perspective than General Arnold could have had during World War II, one can view the Combined Bomber Offensive (CBO) as a campaign that required planners to move away from "stove piping" assumptions to a more integrative approach. The CBO historical record's focus on the heavy bomber has impeded an understanding of how the tactical and the strategic merged to form a more operationally-oriented perspective that included the fighter and fighter-bomber in achieving CBO ends. By looking at the offensive from an airmindedness perspective instead of stove piping resources and ideas into tactical and strategic categories, one can fully appreciate and understand the fighter-bombers important contribution to this effort.

² Colonel Philip S. Meilinger, USAF, *10 Propositions Regarding Air Power* (Washington D.C.: Air Force History and Museums Program, 1995), 20-27. Colonel Meilenger provides an excellent discussion about the foundation of effects-based logic and uses numerous pre and post World War II examples to discuss its evolution and intricate relationship with intelligence. For the purposes of this paper, effects based logic is defined as the targeting of enemy systems to create operational or strategic effects within a specified period of time. These effects directly contribute to operational and strategic ends. For example, the attainment of air superiority would be an effect; the isolation (paralysis) of enemy resources in both time and place that contributes to operational or strategic ends would be an effect; the disruption of decision cycles or command relationships would be an effect.

³ R.J. Overy, *The Air War 1939-1945* (New York: Stein and Day Publishers, 1980), 79.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

⁷ Haywood S. Hansell, Jr., *The Strategic Air War against Germany and Japan* (Washington D.C.: USAF Warrior Studies, Office of Air Force History, U.S. Government Printing Office, 1986), 78, 79.

⁸ Overy, 15-18. Mr. Overy superbly summarizes the doctrinal underpinnings of strategic bombardment in both the AAF and the RAF and explains the enthusiasm for bomber development. By examining the thoughts of General Guilio Douhet, Brig General Billy Mitchell, and Air Marshall Sir Hugh Trenchard, he clearly explains early airpower leaders' vision of an air arm employed separately of ground forces to achieve decisive strategic effects. He explains that early airpower proponents firmly believed airpower's national utility was founded on independent, strategic air action.

⁹ Haywood S. Hansell, Jr., *The Air Plan That Defeated Hitler* (Atlanta: Higgins-McArthur/Longino & Porter, Inc., 1972), 18-21. General Hansell explained that bombers had advanced to the point where airmen firmly believed they could fly high enough and carry enough armament to fend off any fighter attack. It was firmly believed that unless fighters had sufficient advanced warning, they could fly neither fast enough nor high enough to intercept ingressing bomber formations.

¹⁰ R.J. Overy, *Why the Allies Won* (New York, London: W.W. Norton & Company, 1995), 103, 109. Both Roosevelt and Churchill strongly advocated strategic bombing. Roosevelt himself was the inspiration behind planning a bombing offensive as a central part of American war preparations. In May of 1941, he ordered production of five hundred heavy bombers per month—British production was just 498 for the whole of 1941—in order to achieve what he called ‘command of the air by the democracies’. Across the Atlantic, Churchill had enthusiastically supported bombing since World War I. Only five days after becoming Prime Minister in 1940, he lifted all restrictions on British bombing, setting the stage for Britain’s five-year air bombardment campaign against Germany. It was Churchill’s view, expressed in the bleak summer of 1940, that the only thing that would defeat Hitler was ‘an absolutely devastating, exterminating attack by very heavy bombers upon the Nazi homeland’.

¹¹ Hansell, *The Air Plan That Defeated Hitler*, 18.

¹² Overy, *Why the Allies Won*, 115.

¹³ Hansell, *The Air Plan That Defeated Hitler*, 18.

¹⁴ *Ibid*, 18-23.

¹⁵ Lee Kennett, “Developments to 1939,” in *Case Studies in the Development of Close Air Support*, ed. Benjamin Franklin Cooling (Washington D.C., U.S. Government Printing Office, 1990), 47-48, 60. In the 1930’s Air Corps Tactical School text, “The Air Force,” there is a broad assertion that “the air force does not attack objective on the battlefield or in the immediate proximity thereof, except in most unusual circumstances.” Bombing planes would operate over the battlefield “in only the rarest situations.” Additionally, the slow development of pursuit and attack aviation in the early and mid-1930s was clearly the result of preoccupation of Air Corps leaders with the heavy bomber.

¹⁶ *Ibid.*, 60.

¹⁷ James Parton, *Air Force Spoken Here, General Ira Eaker and the Command of the Air* (Alabama, Air University Press, 2000), 118.

¹⁸ Hansell, *The Air Plan That Defeated Hitler*, 28.

¹⁹ *Ibid.*, 75-78, 87. It is important to note that CBO planners were deeply concerned about strategic forces (bombers) being diverted to support ground operations. Hansell and the CBO planning team planned for an extensive number of fighters to be based in both England and the Mediterranean to support ground force operations. They felt that the only way to protect the heavy bombers from being co-opted by ground forces was to plan sufficient numbers of fighters so that the demands upon the strategic air forces would be minimal. In hindsight, this proved to

be fortuitous because it ensured enough fighters and fighter-bombers were available to support not only the CBO but also TORCH, HUSKY, and OVERLORD as well.

²⁰ Hansell, *The Strategic Air War against Germany and Japan*, 25-27. General Hansell discusses the limited options available to fight Nazi Germany that would have immediate impact during initial war planning and preparation. It became obvious that strategic bombardment offered the only immediate means to thwart the German assault on Britain.

²¹ Tami Davis Biddle, *Rhetoric and Reality in Air Warfare* (Princeton and Oxford: Princeton University Press, 2002), 5.

²² Ibid., 7.

²³ Sir Charles Webster and Noble Frankland, *The Strategic Air Offensive Against Germany 1939-1945*,

Vol III (London: Her Majesty's Stationery Office, 1961), 10-12, 14, 24-25.

²⁴ Bernard C. Nalty, John F. Shiner, and George M. Watson, *With Courage, The U.S. Army Air Forces in World War II* (Washington D.C.: U.S. Government Printing Office, 1994), 3.

²⁵ Geoffrey Perret, *Winged Victory* (New York: Random House, 1993), 242-244. Although British strategy focused on industrial targets, they moved to an area strategy to compensate for the poor accuracy of bomber technology early in the war. British Airmen reasoned that if they struck industrial centers, they would be striking not only the factories but also the workers and any surrounding support/resources for those factories. These were viewed as legitimate targets that would definitely affect German industrial output. Additionally, the British firmly disbelieved early American claims that they could hit a "pickle barrel" from 25,000 feet.

²⁶ Hansell, *The Strategic Air War against Germany and Japan*, 72-73. The targets specified in the Casablanca Directive were: 1) German submarine construction yards, 2) German aircraft industry, 3) German transportation, 4) German oil plants, and 5) Other targets of war industry. Submarine construction yards were subsequently removed and the German aircraft industry was moved to number one. Additionally, ball bearings were added.

²⁷ Biddle, 2.

²⁸ Perret, 264-266. Note: Allied planners considered these targets extremely important because half of Germany's fighters were produced in Regensburg and Wiener-Neustadt, with more than half of ball-bearing production in Schweinfurt.

²⁹ Parton, 298-304.

³⁰ Hansell, *The Strategic Air War against Germany and Japan*, 86.

³¹ Overy, *The Air War 1939-1945*, 97.

³² Overy, *Why the Allies Won*, 123.

³³ Richard G. Davis, *Carl A. Spaatz and the Air War in Europe* (Washington D.C.: U.S. Government Printing Office, 1993), 283.

³⁴ Nalty, Shiner, Watson, 199. POINTBLANK came from the Pointblank Directive, which adjusted priorities by acknowledging the importance of gaining air supremacy. The document, however, designated the bomber itself as the means for attaining this end through attacks on airplane plants and the destruction of German fighters in aerial combat. Spaatz recognized the need to modify this strategy to more efficiently employ fighters and fighter-bombers.

³⁵ Perret, 243. It had been a constant struggle for Eaker to get the men and equipment required to prosecute CBO directives. Aircraft and personnel were routinely transferred from his Eighth AF command to the Mediterranean or to the Pacific. Eaker would not see the full industrial output that Spaatz would later experience. This certainly shaped Eaker's attitudes toward fighter and bomber employment early in the CBO campaign.

³⁶ Davis, 298.

³⁷ Meilinger, 14-16.

³⁸ Davis, 300.

³⁹ Biddle, 232.

⁴⁰ Overy, *Why the Allies Won*, 123.

⁴¹ Davis, 300.

⁴² Ibid., 307-309.

⁴³ Ibid., 316-317.

⁴⁴ Ibid., 319.

⁴⁵ Thomas Alexander Hughes, *OVER LORD* (New York: The Free Press, 1995), 205-210. During OVERLORD and COBRA, heavy bombers would fly numerous missions in direct support of ground forces, thus validating Gen Haywood Hansell's fears that strategic bombers would be pulled away from the strategic mission. However, the synergies created by the heavy bombardments along front lines enabled Allied ground forces to break out from the Normandy beachhead and drive into Germany.

⁴⁶ Davis, 360.

⁴⁷ Ibid.

⁴⁸ Ibid., 323.

⁴⁹ Ibid., 327.

⁵⁰ Ibid., 367.

⁵¹ Charles W. McArthur, *Operations Analysis in the U.S. Army Eighth Air Force in World War II* (Providence: The American Mathematical Society, 1990), 182-183.

⁵² Davis, 296.

⁵³ W.F. Craven and J.L. Cate, *The Army Air Forces in World War II, Vol III* (Chicago: The University of Chicago Press, 1951), 98.

⁵⁴ Ibid., 99.

⁵⁵ Ibid., 104.

⁵⁶ Ibid.

⁵⁷ Ibid., 100.

⁵⁸ Davis, 328.

⁵⁹ Department of the Air Force, *Air Force Basic Doctrine, AFDD-1* (Washington D.C.: U.S. Department of the Air Force, September 1997), 23. Flexibility and versatility are key tenets of air and space power. Flexibility allows air and space forces to exploit mass and maneuver simultaneously to a far greater extent than surface forces. At the operational level, flexibility allows air operations to shift from one campaign objective to another quickly and decisively. Versatility in air and space power stems from the fact that it can be employed equally effectively at the strategic, operational, and tactical levels of warfare. Unlike other forms of military power, air and space forces have the versatility to be employed globally with unmatched responsiveness in support of strategic, operational, or tactical objectives and can simultaneously achieve objectives at all three levels of war in parallel operations. The versatility of air and space power, properly executed in parallel attacks, can attain parallel effects which present the enemy with multiple crises occurring so quickly that there is no way to respond to all or, in some cases, any of them. Parallel operations can be conducted at the strategic, operational, and tactical levels of war and either symmetrically against the adversary's air and space forces or asymmetrically against the enemy's surface forces—often simultaneously.

⁶⁰ Ibid., 12, 18. Unity of command ensures the concentration of effort for every objective under one responsible commander. This principle emphasizes that all efforts should be directed and coordinated toward a common objective. Air and space power's theater wide perspective calls for unity of command to gain the most efficient application. The economy of force principle calls for the rational use of force by selecting the best mix of combat power. To ensure overwhelming combat power is available, minimal combat power should be devoted to secondary objectives. At the operational level, this requires minimum effort be made towards secondary objectives that do not support the larger operational or strategic objectives. This principle requires Airmen to exercise a broader operational view.

⁶¹ Meilinger, 49.

⁶² Davis, 345.

⁶³ Ibid., 353-354.

⁶⁴ Ibid., 384-402.

⁶⁵ McArthur, 143.

⁶⁶ Ibid., 148.

⁶⁷ Hughes, 129.

⁶⁸ Ibid., 130.

⁶⁹ Ibid., 131.

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